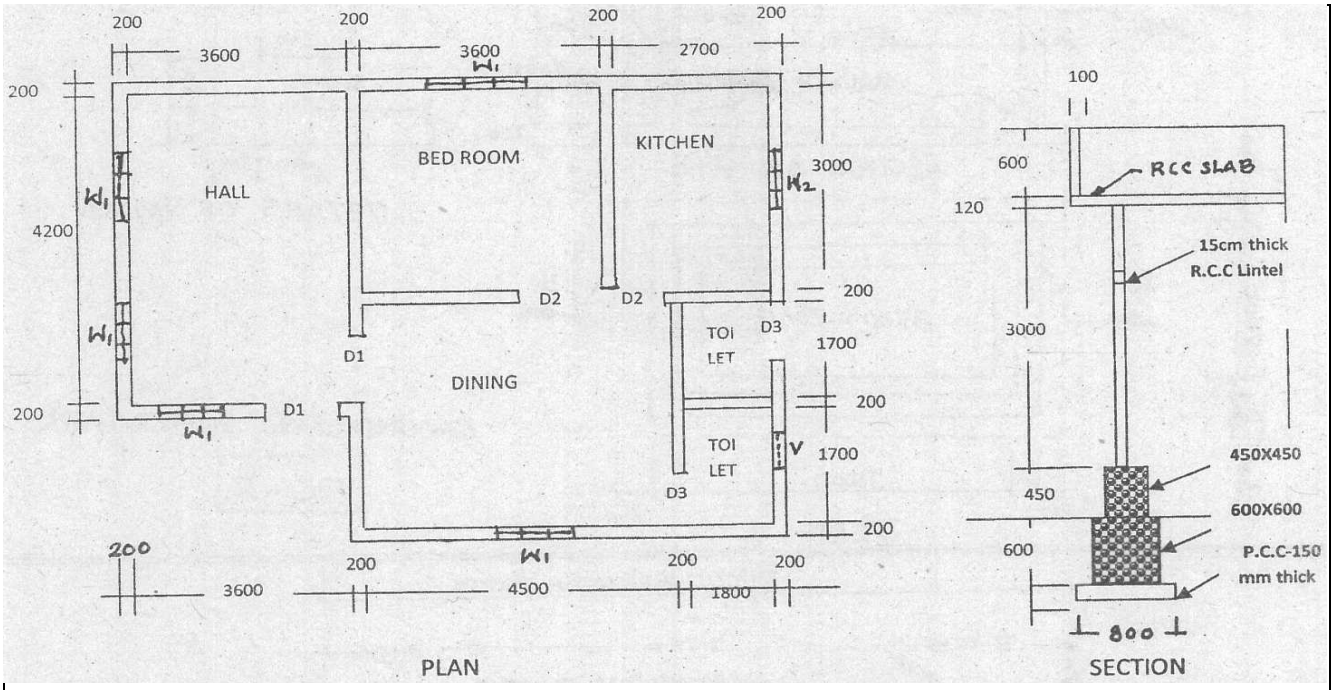
QUANTITY SURVEYING I

PREVIOUS YEAR QUESTION AND SOLUTION

Prepare the estimate of the building shown below.



Doors:
D1: 1100 X 2100
D2: 1000 X 2100
D3: 900 X 2100

Windows:
W1: 1500 x 1500
W2: 1500 x 1100

Ventilators:
V: 1000 x 500

Section of frames of Door, Window & ventilator: 75 x 100

All dimensions in mm

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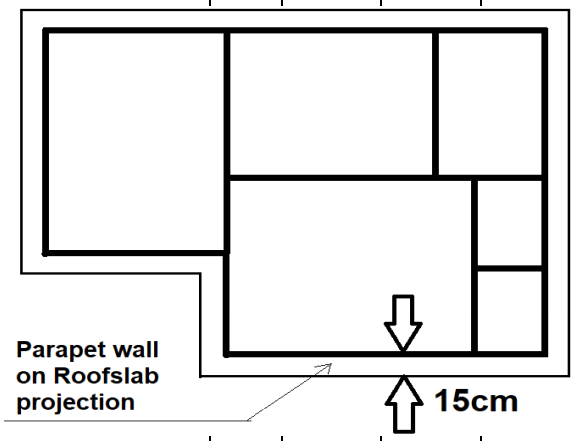
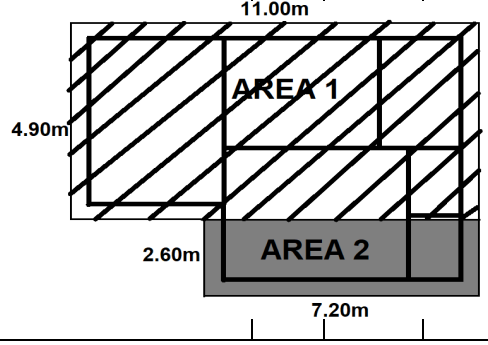
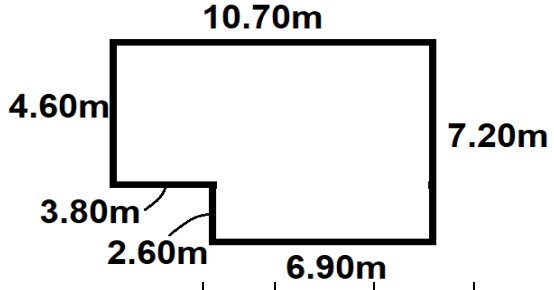
Sl. No.	Item of Work	No.	L (m)	B (m)	H (m)	Quantity	Remarks
1.	Earthwork in excavation using manual or mechanical means for foundation trenches	1	49.20	0.80	0.75	**29.52 m3**	**Centreline lengthn for earthwork:** Outer: 3.60+0.20+3.60+0.20+2.70+0.20+3.00+0.20+1.70+0.20+1.70+0.20+1.80+0.20+4.50+0.20+**2.40**+0.20+3.60+0.20+4.20+0.20 =35.00m Inner (right hand wall of hall): 4.20+0.20-0.80 =3.60m Inner (left hand wall of kitchen): 3.00+0.20-0.80 =2.40m Inner (bedside & kitchenside wall of Dining): 3.60+0.20+2.70+0.20-0.80 =5.90m Inner (right hand wall of Dining): 1.70+0.20+1.70+0.20-0.80 =3.00m Total centerline length: 35.00+3.60+2.40+5.90+3.00 =49.90m
2.	Plain Cement Concrete of mix 1:4:8 in foundation	1	49.20	0.80	0.15	**5.90 m3**	Total centerline length same as item1
3.	Random Rubble masonry in cement mortar 1:6 (a) In Foundation (b) In Basement	 1 1	 50.70 51.30	 0.60 0.45	 0.60 0.45 **Total:**	 18.25 m3 10.39 m3 **28.64 m3**	**Centreline length for foundation:** Outer: =35.00m Inner (right hand wall of hall): 4.20+0.20-0.60 =3.80m Inner (left hand wall of kitchen): 3.00+0.20-0.60 =2.60m Inner (bedside & kitchenside wall of Dining): 3.60+0.20+2.70+0.20-0.60 =6.10m Inner (right hand wall of Dining): 1.70+0.20+1.70+0.20-0.60 =3.20m Total centerline length: 35.00+3.80+2.60+6.10+3.20 =50.70m **Centreline length for basement:** Outer: =35.00m Inner (right hand wall of hall): 4.20+0.20-0.45 =3.95m Inner (left hand wall of kitchen): 3.00+0.20-0.45 =2.75m Dining): 3.60+0.20+2.70+0.20-0.45 =6.25m Inner (right hand wall of Dining): 1.70+0.20+1.70+0.20-0.45 =3.35m

							Total centerline length: 35.00+3.95+2.75+6.25+3.35 =51.30m
4.	Brickmasonry in cement mortar 1:6 in superstructure						**Centreline length for brickwalls:**
	(a) Walls	1	52.30	0.20	2.85	29.81 m3	Outer: =35.00m
	(b) Parapet	1	36.95	0.10	0.60	2.22 m3	Inner (right hand wall of hall): 4.20+0.20-0.20
	Deductions:						=4.20m
	D1	2	1.10	0.20	2.10	-0.92 m3	Inner (left hand wall of kitchen): 3.00+0.20-0.20
	D2	2	1.00	0.20	2.10	-0.84 m3	=3.00m
	D3	2	0.90	0.20	2.10	-0.76 m3	Inner (bedside & kitchenside wall of Dining): 3.60+0.20+2.70+0.20-0.20
	W1	5	1.50	0.20	1.50	-2.25 m3	=6.50m
	W2	1	1.50	0.20	1.10	-0.33 m3	Inner (right hand wall of Dining): 1.70+0.20+1.70+0.20-0.20
	V	1	1.00	0.20	0.50	-0.10 m3	=3.60m
					Total:	**26.83 m3**	Total centerline length: 35.00+4.20+3.00+6.50+3.60 =52.30m
							**Height of brickwork**= 3.00-0.15= 2.85m The **parapet (thickness 10cm)** is constructed on a projection beyond the outer wall, the value of which is not given in the question, let us assume it to be 15cm. Centreline length of parapet is given by: (0.15+0.20+3.60+0.20+3.60+0.20+2.70+0.20+0.15-0.10)+ (0.15+0.20+3.00+0.20+1.70+0.20+1.70+0.20+0.15-0.10)+ (0.15+0.20+1.80+0.20+4.50+0.20+0.15-0.10)+ (2.40+0.20)+ (3.60+0.20)+ (0.15+0.20+4.20+0.20+0.15-0.10) =36.95m
5.	Centring & shuttering for roof slab						
	Hall	1	3.60	4.20		15.12 m2	
	Bedroom	1	3.60	3.00		10.80 m2	
	Kitchen	1	2.70	3.00		8.10 m2	
	Dining	1	4.50	3.60		16.20 m2	
	Toilet	2	1.80	1.70		6.12 m2	
					Total:	**56.34 m2**	
6	Reinforced cement concrete of mix 1:1.5:3						Assuming lintel is provided all throughout the wall
	(a) Roof slab						
	Area1	1	11.00	4.90	0.12	6.47 m3	
	Area2	1	7.20	2.60	0.12	2.25 m3	
	(b) Lintel beams	1	52.30	0.20	0.15	1.57 m3	**Centreline length for lintel beam:**
					Total:	**10.28 m3**	same as centreline length of wall =52.30m
							

7	Providing, cutting and placing in position steel reinforcements - TMT bars of Fe500 For roof slabs & lintel beams @ 80kg/m3 of concrete For 10.28m3 concrete (see item no.6)		10.28	80.00		**822.40 kg**	
8	12mm thick cement plaster of mix 1:6 on walls (a) Inner walls:						
	Hall	1	2(3.60+4.20)		3.00	46.80 m2	Outer length of walls: (See figure)
	Bedroom	1	2(3.60+3.00)		3.00	39.60 m2	10.70+7.20+6.90+2.60+3.80+4.60
	Dining	1	2(4.50+3.60)		3.00	48.60 m2	=35.80m
	Kitchen	1	2(2.70+3.00)		3.00	34.20 m2	
	Toilets	2	2(1.80+1.70)		3.00	21.00 m2	
	(b) Outer walls:	1	35.80		3.87	138.55 m2	Height over which outer wall is platered: 3.00+0.15 (roofslab projection)+ 0.12(roofslab thickness)+ 0.60(parapet wall height)
	Deductions:						=3.87m
	D1	2	1.10		2.10	-4.62 m2	
	D2	2	1.00		2.10	-4.20 m2	
	D3	2	0.90		2.10	-3.78 m2	
	W1	5	1.50		1.50	-11.25 m2	For Openings of area >0.5m2 and <3m2, deduction for doors & windows shall be made for one face only.
	W2	1	1.50		1.10	-1.65 m2	
	V	1	1.00		0.50	-0.50 m2	
					Total:	**302.75 m2**	
	Outer dimensions of the building  						
9	6mm thick plaster of mix 1:3 on ceiling						
	Hall	1	3.60	4.20		15.12 m2	
	Bedroom	1	3.60	3.00		10.80 m2	
	Dining	1	4.50	3.60		16.20 m2	
	Kitchen	1	2.70	3.00		8.10 m2	
	Toilets	2	1.80	1.70		6.12 m2	
					Total:	**56.34 m2**	
10	Providing and laying in position Cement Concrete of grade 1:2:4 PCC flooring for:						Assume a PCC flooring 75mm thick
	Hall	1	3.60	4.20	0.075	1.13 m3	
	Bedroom	1	3.60	3.00	0.075	0.81 m3	
	Dining	1	4.50	3.60	0.075	1.22 m3	
	Kitchen	1	2.70	3.00	0.075	0.61 m3	
	Toilets	2	1.80	1.70	0.075	0.46 m3	

	Beneath doors:						
	D1	2	1.10	0.20	0.075	0.033 m3	
	D2	2	1.00	0.20	0.075	0.030 m3	
	D3	2	0.90	0.20	0.075	0.027 m3	
					Total:	**4.32 m3**	
11	Providing and laying vitrified floor tiles of approved make on 20mm thick cement mortar 1:4						
	PCC flooring for:						
	Hall	1	3.60	4.20		15.12 m2	
	Bedroom	1	3.60	3.00		10.80 m2	
	Dining	1	4.50	3.60		16.20 m2	
	Kitchen	1	2.70	3.00		8.10 m2	
	Toilets	2	1.80	1.70		6.12 m2	
	Beneath doors:					0.00 m2	
	D1	2	1.10	0.20		0.44 m2	
	D2	2	1.00	0.20		0.40 m2	
	D3	2	0.90	0.20		0.36 m2	
					Total:	**57.54 m2**	
12	Providing woodwork in frames of doors, windows, etc. and fixed in position with holdfast etc. all complete						
	a)Door D1						
	2 verticals	2x2	2.10	0.075	0.10	0.063 m3	
	1 horizontal	2x1	1.40	0.075	0.10	0.021 m3	
	b)Door D2						
	2 verticals	2x2	2.10	0.075	0.10	0.060 m3	
	1 horizontal	2x1	1.30	0.075	0.10	0.020 m3	
	c)Door D3						
	2 verticals	2x2	2.10	0.075	0.10	0.063 m3	
	1 horizontal	2x1	1.20	0.075	0.10	0.018 m3	
	d)Window W1						
	3 verticals	5x3	1.50	0.075	0.10	0.169 m3	
	2 horizontals	5x2	1.80	0.075	0.10	0.135 m3	
	e)Window W2						
	3 verticals	1x3	1.10	0.075	0.10	0.025 m3	
	2 horizontals	1x2	1.80	0.075	0.10	0.027 m3	
	f)Ventilator V						
	2 verticals	1x2	0.50	0.075	0.10	0.008 m3	
	2 horizontals	1x2	1.30	0.075	0.10	0.020 m3	
					Total:	**0.63 m3**	
13	Providing woodwork in shutters of doors, windows, etc. all complete						Provide 15mm rebate
	a)Door D1	2	0.98	2.04		4.00 m2	L=1.10-(2x0.075)+(2x0.015)=0.98m H=2.10-(0.075)+(0.015)=2.04m
	b)Door D2	2	0.88	2.04		3.59 m2	L=1.00-(2x0.075)+(2x0.015)=0.88m H=2.10-(0.075)+(0.015)=2.04m
	c)Door D3	2	0.78	2.04		3.18 m2	L=0.90-(2x0.075)+(2x0.015)=0.78m H=2.10-(0.075)+(0.015)=2.04m
	d)Window W1	5	1.365	1.38		9.42 m2	L=1.50-(3x0.075)+(6x0.015)=1.365m H=1.50-(2x0.075)+(2x0.015)=1.38m
	e)Window W2	1	1.365	0.98		1.34 m2	L=1.50-(3x0.075)+(6x0.015)=1.365m H=1.10-(2x0.075)+(2x0.015)=0.98m
	f)Ventilator V	1	0.88	0.38		0.33 m2	L=1.00-(2x0.075)+(2x0.015)=0.88m H=0.50-(2x0.075)+(2x0.015)=0.38m
					Total:	**21.86 m2**	

14	Apply one coat of water thinnable cement primer of approved brand on wall surface a)on walls(same as item no.8) b)on ceiling(same as item no.9)				 **Total**	 302.75 m2 56.34 m2 **359.09 m2**	
15	Finishing with emulsion paints on new work a)on walls(same as item no.8) b)on ceiling(same as item no.9)				 **Total**	 302.75 m2 56.34 m2 **359.09 m2**	
16	Applying priming coat with ready mixed pink or grey primer of approved brand on wood work a)panelled doors (on both sides) D1 D2 D3 b)glazed windows (on both sides) W1 W2 V	 2 x 2 2 x 2 2 x 2 5 x 2 1 x 2 1 x 2	 1.10 1.00 0.90 1.50 1.50 1.00	 2.10 2.10 2.10 1.50 1.10 0.50	 **Coeff.** 1.30 1.30 1.30 **Coeff.** 0.80 0.80 0.80 **Total**	 12.01 m2 10.92 m2 9.83 m2 18.00 m2 2.64 m2 0.80 m2 **54.20 m2**	Use coefficient 1.30 for panelled/framed/ braced doors&windows. Use coefficient 0.80 for glazed/gauzed doors & windows.
17	Painting with synthetic enamel paint of approved brand to give an even shade (2 or more coats) a) On panelled doors & glazed windows (same as item 16)				 **Total**	 **54.20 m2**	
18	Providing and fixing Indian type W.C. pan with P or S trap, 10 litre low level white P.V.C. flushing cistern, including flush pipe, with manually controlled device (handle lever), with all fittings and fixtures complete. a)For each toilet					 **2 nos**	
19.	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, all complete a)One for each toilet and one for the dining					 **3 nos**	

20	Providing and fixing Stainless Steel kitchen sink as with C.I. brackets and stainless steel plug 40 mm, all complete a)For kitchen					**1 no.**	
21	Providing and fixing brass bib cock of approved quality of 15mm nominal bore One for each toilet					**2 nos.**	
22	Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and 15 mm nominal bore a)for kitchen					**1 no.**	
23	Constructing brick masonry chamber for underground inspection chamber and bends with bricks in cement mortar 1:4 C.I. cover with frame 455x610 mm internal dimensions, R.C.C. top slab with 1:2:4, foundation concrete 1:5:10, inside plastering 12 mm thick with cement mortar 1:3, finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design: -Inside dimensions 455x610 mm and 45 cm deep for single pipe line					**2 nos.**	
24	Providing and fixing Polyvinyl Chloride (PVC) pipes, having thermal stability for hot & cold water supply. This includes jointing of pipes & fittings with one step PVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge a) 25mm nominal outer dia (for water supply) b) 62.5mm nominal outer dia (for washbasin waste) c) 110mm nominal outer dia (for water closet waste)					**30 m** **10 m** **10 m**	